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GRAPHIC COMMUNICATIONS

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GRAPHIC COMMUNICATIONS

ACKNOWLEDGEMENT

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INDUSTRIAL ARTS

GRAPHIC COMMUNICATIONS 10, 20, 30

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INDUSTRIAL ARTS

Introduction

The Industrial Arts cluster courses are designed to meet the needs of students who wish to acquire greater depth of understanding in selected industrial areas.

Through these programs students are able to work in an environment which is conducive to challenging intellect and talents in a number of technical and craft areas. Students become aware of the interrelationship and the dependency of one technology upon the others. They have the opportunity to develop broad concepts of the principles and skills required in the various occupations.

This course can contribute greatly to achieving the objectives of secondary education.

General Objectives

Industrial arts is a part of general education and as such instructors need to understand the objectives of the Alberta education program.

Functional Objectives of the Alberta Secondary Schools

1. Personal Development
2. Growth in Family Living
3. Growth Toward Competence in Citizenship
4. Occupational Preparation

OBJECTIVES OF THE SENIOR HIGH SCHOOL INDUSTRIAL ARTS PROGRAM

The Industrial Arts program helps to attain the functional objectives of Alberta Secondary School Education as set forth above.

Within the scope of these general objectives the unique contributions made possible through Industrial Arts courses are summed up in the following objectives:

Industrial Arts courses will provide an opportunity for students:

1. To develop an understanding of related technological clusters and the interrelationship of the technologies within the cluster areas.

2. To develop an understanding of the applications of the academic disciplines in an industrial environment.
3. To study and work in an environment which stimulates the individual to discover and develop his interests and talents.
4. To develop an understanding of man's changing role in an advancing industrialized society.
5. To develop sound safety attitudes with respect for safe working habits and practices in the use of tools, equipment and materials.
6. To develop personal and social responsibility.
7. To develop a degree of skill necessary to satisfactorily perform the operations and processes required by the curriculum.

Definition of Terms

1. Multiple-activity laboratory - a laboratory or shop where three or more activities are in progress at the same time.
2. Area laboratory - a laboratory in which a cluster area is taught, e.g. Electronics 10, 20, 30 would be taught in an electronics laboratory; materials in a materials laboratory.
3. Cluster - or cluster area - the technologies and crafts that are closely related are grouped in clusters. Four main clusters have been developed in the Alberta Senior High School Program.

Electronics - made up of electricity, electronics, computer

Materials - Wood, metal, plastics, craft materials

Graphic Communication - drafting, photography, printing, duplicating

Power Mechanics - Power sources, power transmission

4. Course Unit - a unit consists of from 9 - 10 weeks or work in a specific area. In all the Industrial Arts courses of both the General and the Cluster areas there are four units of work each year.

Description of the Program

The cluster programs each consist of four units of work. These units are made up of content that is related or show the interrelationship between the various crafts and technologies.

The emphasis in each course is on understanding the underlying principles involved, how they are put into practical use and how controlled. In addition the proper use of materials, tools and equipment is stressed in areas where these apply.

Scope

The Industrial Arts Cluster Courses 10, 20 and 30 are a series of four-five credit courses. Each cluster develops sequential material in the following order:

(next page)

		10	20	30
A.	Electronics	Basic Electricity- Electronics Systems Study Units of a System Components of a System	Power Supply R.F. Amplification A.F. Amplification Oscillators	Computer Computer F.M. Video
B.	Materials	Wood Metals Plastics Industrial Craft	Wood Metals Plastics Industrial Craft	Wood Metals Plastics Industrial Craft
C.	Graphic Communications	Drafting Photography Printing Processes Printing Con't.	Drafting Offset Photography	Drafting Offset Photography
D.	Power Mechanics	Internal Combustion Engine Four cycle Internal Combustion Engine Two cycle Hydraulics Mechanics	Internal Combustion Enging Electrical and Turbine	Internal Combustion Engine Solid Fuel-Rockets Hydraulics Pneumatics

Laboratory Organization and Equipment

One laboratory per cluster is to be planned and equipped to handle the program. In some cases where a double or triple facility has been provided certain of the cluster courses may be taught.

The laboratory should be organized so that the various activities that comprise the course can be efficiently taught. The multiple-activity organization is recommended in the courses that lend themselves to this system, e.g., Materials, Graphic Communications.

Transition

The industrial arts cluster courses will replace all the present unit shop courses. Special allowances will be made during the transition period (to 1970). The Supervisor of Industrial Arts, Department of Education, must be notified of deviations from the standard program or credits may be withheld.

Administration

1. Time - Each of these courses may be offered for four - five credits. The number of minutes required per credit should conform with the regulations described in the Senior High School Handbook.
2. Scheduling - Industrial Arts courses can be satisfactorily taught in blocks of time from 50 to 200 minutes. Double period blocks twice a week have proven very satisfactory.
3. Class Size - A maximum class size of twenty is suggested. When student numbers go beyond that, student and teacher efficiency is seriously hampered because of insufficient space and equipment. Industrial arts laboratories in this province are not planned to cope with numbers larger than twenty.
4. Records - Every instructor should keep the following records:
 - (a) Enrolment and attendance
 - (b) Daily lesson plan
 - (c) Yearly plan
 - (d) Record of student achievement
 - (e) Inventory of equipment and supplies.

It is recommended that the records be kept in a simple, efficient manner.

5. Student Evaluation - Evaluation must be based on what the student has learned "know", and what he has done "do". The following is a suggested criteria for grading students.

Related Theory - tests, written exercises, reports 50%
("Know" Column)

Activity - projects experiments, operations performed 50%
("Do" Column)

Safety Program

Every shop must have an effective safety program. This does not mean that the promulgation of a set of rules and regulations will satisfy this end. Students must be taught in each and every subject studied within the industrial arts framework, the "hows and whys" inherent in the safety program. It is the responsibility of the instructor to supply continuous and vigilant supervision and to ensure that all students engage in only safe shop practices. A good safety program would include:

1. Regular and thorough instruction and revision.
2. Constant vigilance.
3. Checking and evaluation of student safety habits by the instructor.
4. Complete first aid equipment kept in first-class condition.
5. Non-skid paint and clearly marked working areas around all machinery.
6. Proper clothing with particular attention to eye protection.
7. Machines and tools in good working condition.
8. Routine reporting of all accidents.
9. Good housekeeping.

The following is a sample of safety regulations which the instructor might be expected to enforce:

1. No power machines shall be used by any student before specific instruction has been given with regard to safe operation and safety precautions.
2. No power machine shall be used while the instructor is absent from the shop.
3. No machine shall be used by any student unless adequately guarded.
4. Approved eye protection must be worn for certain operations.

Note: A good safety slogan which should be put into practice at all times - a place for everything and everything in its place.

There are five basic steps in safety education:

1. Set a good safety example for student.
2. Instruct each student thoroughly in the safety precautions of his job.
3. Keep all tools sharp and in good condition.
4. Keep all safety devices in proper use.
5. Follow up safety instructions constantly. The shop will be as safe as the instructor makes it.

Dress and deportment play an important part in the operation of a safe shop program. Students and instructor should be neatly dressed at all times and the instructor should take care to ensure that no loose and dangerous clothing is worn. Safety aprons, goggles, gloves, should be used wherever necessary.

It should be pointed out that failure to comply with every reasonable safety precaution, may jeopardize the instructor's position in any claim for compensation. Each school should receive the excellent publications and bulletins dealing with accident prevention and safety procedures distributed by the Workmen's Compensation Board.

Note: Accidents must be promptly reported to some senior school authority. If no other person is designated, this authority is the Principal.

INDUSTRIAL ARTS, GRAPHIC COMMUNICATIONS

1. (a) Introduction

This course is designed to provide an introduction to the field of Graphic Communications. The student will be required to learn the basic principles of Drafting, Printing, Duplicating and Photography and the interrelationship of the technologies within this cluster.

The development of a worthy project in Graphic Communications requires fore sight in planning, initiation, tenacity to stay with the project until completed, and an understanding appreciation of human reactions to the printed page.

Graphic Communications provides an opportunity for self-expression. The planning, preparation and printing requires analytical and creative ability, therefore, the student has an unusual opportunity to cultivate and develop those qualities that are essential in our industrialized civilization.

Through exploratory contacts the student has a better understanding of the skills necessary in the various processes and procedures of Graphic Communication industry. This enables the student to familiarize himself with the job opportunities in the field of Graphic Communications sufficient to make an intelligent vocational choice.

(b) Course Organization

The course in Graphic Communications includes the four areas of Drafting, Printing, Duplicating and Photography. Each of these is further subdivided to include representative experiences in each. A year's work consists of one unit from each area.

(c) Objectives

1. To introduce the field of Graphic Communications to the student to the point that he will understand the basic materials and processes used in industry.
2. To develop a knowledge of the skills involved in Graphic Communications.
3. To give the student practice in the approved methods and procedures required for Drafting, Photography, Printing and Duplicating processes.
4. To acquaint the student with the opportunities in the field of Graphic Communications.
5. To inculcate the citizenry with the importance of the Graphic Communications industries in everyday living.
6. To provide for avocational interests.

GRAPHIC COMMUNICATIONS 10

Unit 1. Drafting

Specific Objectives

1. To develop the ability to read and interpret plans and blueprints.
2. To develop the ability to make multiview drawings.
3. To develop a basic knowledge of drafting skills and its application to industry.
4. To develop the ability to readily apply drafting as an integral part of the shop situation.

Course Content

What the student should be able to:

DO

KNOW

Mechanical Processes

- | | |
|---|--|
| 1. Practice exercise making use of all instruments. | 1. Instrument use.
-T-Square
-Triangles
-Scales |
| | 2. Drafting Machine |
| | 3. White Printer |

Projection Methods

Freehand Drawing

- | | |
|--|------------------------------------|
| 4. (a) Sketch straight lines.
(b) Sketch circles and arcs.
(c) Make approximations of measurements and angles. | 4. Methods of sketching. |
| 5. Make freehand sketch on a spirit or multilith master. | 5. Fundamentals of 3-view drawing. |

Orthographic Projection

- | | |
|--|---|
| 6. From isometric draw and dimension orthographic (straight lines and angles). | 6. Review of line and symbol conventions. |
| | 7. Fundamentals of three-view projection. |

Isometric Projection

- | | |
|--|-------------------------------|
| 8. From orthographic view draw and dimension simple isometric (straight lines and angles). | 8. Fundamentals of isometric. |
|--|-------------------------------|

Pictorial Drawing

- | | |
|---|-------------------------------------|
| 9. Draw cabinet projection given the orthographic view. | 9. Other types of oblique drawings. |
|---|-------------------------------------|

Sectional Drawing

- | | |
|---|---|
| 10. Draw full section of some previous drawing. | 10. Conventional lines for full and half section. |
|---|---|

Machine Drawing

- | | |
|---|--|
| 11. Draw simple detail and assembly drawing of machine project. (e.g. tool-makers clamp, 4 different parts) | 11. Basic machine shop techniques. |
| | 12. Conventional symbols in machining, and m/c allowances. |

Electrical Drawing

- | | |
|---|---------------------------|
| 13. Draw basic electrical wiring circuits. Series, parallel, etc. | 13. Conventional symbols. |
|---|---------------------------|

Sheetmetal Drawing

- | | |
|---------------------------------------|---|
| 14. Develop drawing of angular scoop. | 14. Development of straight and angular surfaces. |
|---------------------------------------|---|

Material Processes

- | | |
|--|-----------------------------------|
| 15. Trace a machine assembly drawing. | 15. Techniques of pencil tracing. |
| 16. Make and develop a blueprint of the above drawing. | 16. Blueprinting process. |
| | 17. Different types of prints. |
| | 18. Various copying machines. |

Relationship To Industry

Blueprint Reading

- | | |
|-------------------------------|--|
| 19. Read assigned blueprints. | 19. Conventional lines and symbols used in all branches of drafting. |
|-------------------------------|--|

Whenever possible the interrelationship between drafting and the other units in Graphic Communications should be emphasized. e.g.

Freehand Sketching - make sketch on plate and duplicate

Orthographic Projection - print isometric view and from this draft orthographic

References

Drafting

Stirling Norman, Technical Drawing, Macmillan Company of Canada

Franch and Svenson, Mechanical Drawing, 7th Edition, McGraw-Hill of Canada

Printing and Graphic Arts

C. W. Hague, Printing and Allied Graphic Arts, Bruce Publishing Co.

Kauffman, Graphic Arts Crafts, Van Nostrand

Albert Koslaff, Art and Craft of Screen Processes, Bruce Publishing Co.

Darvey Carlsen, Graphic Arts, Charles A. Bennet Co. Inc., Peoria, Ill.

Careers in Graphic Arts, Graphic Arts Council, Ottawa

Marinaccio and Osburn, Exploring Graphic Arts, Van Nostrand

Information from Barber Ellis of Alberta Limited - Edmonton, Calgary (upon request)

GRAPHIC COMMUNICATIONS 10

Unit 2. Photography

Introduction

These units are designed to provide an introduction to picture-taking and darkroom techniques with emphasis on the place of photography in the broad technical area of Graphic Communications. The student will be required to learn basic pictorial composition, exposure data, types of films, contact printing and enlarging. Broad photography areas considered here are commercial photography, portraiture, press photography and industrial photography. The student will be required to keep a notebook, which will contain prints of each picture assignment with brief evaluation of each, as well as information gathered through teacher lecture and demonstration.

Objectives

1. To introduce photography to the student to the point that he will understand the basic materials and processes.
2. To develop a working knowledge in photography.
3. To give the student practice in approved methods and procedures in developing, stopping, fixing, washing and drying films and prints.
4. To acquaint the student with the unlimited opportunities in the photographic industry and its relationship to graphic communications.

Course Content

What the student should be able to:

DO

KNOW

Composition and/or Design

- | | |
|--|------------------------------|
| 1. (a) Critical analysis of slides using principles of composition as a guide. Bring a landscape shot for criticism. | 1. Principles of composition |
| (b) Organize a notebook. | (a) Harmony |
| | (b) Proportion |
| | (c) Balance |
| | (d) Rhythm |
| | (e) Simplicity |
| | (f) Center of interest |
| | (g) Major and minor motif |
| | (h) Framing |
| | (i) Baseline |
| | (j) Lines |
| | (k) Color |

Composition and/or Design (Cont.)

- | | | | |
|----|---|----|---|
| 2. | Depth of field - Set up and shoot a "lab type" situation to illustrate dept of field, using smallest and largest aperture opening. | 2. | Lighting
(a) Front, back, cross
(b) Sun, shade
(c) Flash, natural |
| 3. | Depth of field - take a picture to illustrate practical use of dept of field. | 3. | Creativity in composition - expression through photography. |
| 4. | Take a picture of a person outdoors. Keep a record of lighting conditions. Use a light meter. Mount print and accumulated data in notebook. | 4. | Procedures and problems in outdoor photography.
(a) Direct sunlight
(b) Shade
(c) Fill-in flash
(d) Fill-in reflector |
| 5. | Take a portrait of a boy or girl using flash bulbs or strobe. | | |

Materials

- | | | | |
|----|---|-----|---|
| 6. | Evaluate types of film for their specific purposes. | 6. | Physical structure of film and its reaction to light. |
| | | 7. | Forms of film in common use
(a) Roll
(b) 35 M.M.
(c) Sheet |
| | | 8. | Types of film
(a) Orthochromatic
(b) Panchromatic |
| | | 9. | Meaning of ASA indices |
| | | 10. | Enlarging papers
(a) Difference between enlarging and contact papers
(b) Grades
(c) Variable contrast
(d) Surfaces
(e) Weights
(f) Correct safelight to use |

Mechanical Processes

Cameras

11. Brief history of photography.
12. Obtain examples and indicate the use of the following in your notebook
 - (a) Box camera
 - (b) Miniature camera
 - (c) Reflex type camera
 - (d) Press cameras
 - (e) View cameras
13. Study and identify parts of the camera.
 - (a) Lense - construction, focal length, light wave properties, aberration, depth of field.
 - (b) Shutter - focal planes and between-the-lens shutters.
 - (c) Diaphragm - lens opening f-stops EV system.
 - (d) Focusing Devices - split image, superimposed, ground glass, depth of field.
14. Loading and unloading the camera.
15. Rules for correct exposure.
16. Function and use of light meters.
17. Types of flash bulbs
 - (a) Classification
 - (b) Guide numbers
18. Use of electronic flash
 - (a) Synchronization
 - (b) Rating
12. Kinds and use of following cameras
 - (a) Box camera
 - (b) Miniature Cameras
 - (c) Reflex Type Camera
 - (d) Press Cameras
 - (e) View Cameras
13. Parts of a camera and their function.
15. Exposure meters - study and be able to use one proficiently.

Material Processes

Contact Printing

- | | |
|---|---|
| 19. List safety precautions and correct darkroom procedures. | 19. Dangers of metal poisoning. |
| 20. Using a normal negative, make a series of exposures ranging from one second to six seconds. Evaluate. | 20. What is a contact print. |
| 21. Draw the plan of a darkroom. | 21. Darkroom layout. |
| 22. Outline the correct procedures for mixing chemicals. | 22. Chemicals - preparation. |
| 23. Using a normal negative make a contact print of Velox ranging from F1 to F4. Analyze. | 23. Paper - size, surface, tone, contrast, weight. |
| 24. Ferrottype and dry mount prints. | 24. Safelights - selection of filters - correct use. |
| 25. Select correct contrast paper and print one under exposed and one overexposed negative. | 25. A.O.P. papers and contact printing frames. |
| 26. Make a personalized Christmas card. | 26. Contact printer - parts and function. |
| | 27. Proper methods of developing and printing with regards to temperature and time. |
| | 28. Washing and ferrotyping prints. |
| | 29. Dry mounting techniques. |
| | 30. Methods of stripping negative on to mask. |
| | 31. Loading - sheet film holders
- developing tank. |
| | 32. Chemicals and their function. |
| | 33. Darkroom procedures. |

Enlarging

- | | |
|---|--|
| 34. Examine enlarger and identify parts. | 34. Types of enlargers. |
| 35. Prepare for enlarging
(a) Safelight selection
(b) Cleaning negative and carrier
(c) Prepare chemicals | 35. Functions and parts of enlarger. |
| 36. Follow correct procedures for enlarging
(a) Loading negative
(b) Enlarging
(c) Focussing
(d) Correct aperture opening | |
| 37. Expose test strip at working aperture opening and develop | 37. How to make an enlargement. |
| 38. Use Kodak print scale to expose a test strip. Develop. | 38. Projection control.
(a) Spot printing
(b) Dodging
(c) Cropping
(d) Composition |
| 39. Make the enlargement. | |
| 40. Improve original enlargement through use of projection controls. | |

Relationship To Industry

- | | |
|---|---|
| 41. Write a research paper on a phase of photography as a vocation. | 41. Career opportunities
(a) Commercial advertising
(b) Portraiture
(c) Nature photography
(d) Process cameraman
(e) Training required
(f) Industrial photography
(g) Police photography
(h) Display techniques |
|---|---|

References

Neil Stillman, Industrial Arts Work Units in Graphic Arts,
Available from Still-Mar Associates, 25 Sherborne Avenue, Lancaster, New York.

Prices are as follows:

1-5 copies	\$1.25 each	51 - 99 copies	\$.60 each
6-10 copies	1.00 each	100-499 copies	.45 each
11-50 copies	.75 each	500 copies	.35 each

(NOTE: prices are approximate and subject to change)

Bookbinding

Hewitt-Bates J.S., Bookbinding, Dryad Handicrafts, Northgates, Leicester

Photography

McCoy Robert A., Practical Photography, McKnight & McKnight

Kodak Data Books - Set - Camera Companies

Morgan Willard D., Graphic Reflex Photography

Duplicating

Gestetner Manuals

1 set Kodak Reference Books (Approx. \$13.00) consisting of:

- W22 Kodak Photographic Notebook
- J2 Basic Developing, Printing, Enlarging
- G16 Enlarging in Black & White & Color
- B1 Filters & Polascreens
- G1 Photographic Papers
- J1C Processing Chemicals & Formulae
- E74 Color as Seen & Photographed
- K13 Darkroom Design & Construction
- R20 Kodak Master Darkroom Guide
- M1 Copying
- E8 Checking with Color
- C30 Better 35 m.m. Snapshots

Filmstrips

Among others, the following filmstrips and accompanying tape or script may be purchased (McGraw-Hill) or obtained free on loan from: Ansco Camera Club Services, Ansco of Canada Limited, Cooksville, Ontario.

- #10C Projection Printing Part 1
- #11C Projection Printing Part 2
- #12C Spot Printing & Dodging
- #13C Print Contrast Control
- #14C Advanced Projection Control
- #15C Composition in Printing
- #16C Spotting of Prints
- #17C Print Presentation
- #14C The Brady Exhibit
- #8C Portrait Critique
- #20C Color Photography at Night
- #22C Processing Anscochrome at home
- #25C Elements of Prize Winning Color Slides

Information on other excellent reference books, films and data sheets, may be obtained from Matt Shykora, 10643 - 61 Street, Edmonton, Alberta

GRAPHIC COMMUNICATIONS 10

Unit I, Printing and Reproducing Processes

Introduction

Printing and reproduction processes provide a foundation for the entire field of visual communications. The operations and processes under this heading should be related to the areas of drafting and photography wherever possible. In addition their presentation should include the application of science, mathematics, English, journalism, art and technology where feasible.

Due to the broadness of this area two units of work are outlined under the one heading.

Course Content

What the student should be able to:

DO

KNOW

Composition and Design

- | | |
|--|--|
| 1. Collect from magazines, books and papers type styles and sizes. List according to groups and families. | 1. Basic type families. |
| 2. From ATF cards trace a variety of letters noting carefully the shape and form of each letter. | 2. Characteristics of type
- Serifs
- Italic
- Script |
| 3. Find or draw a sample of display or contrast. | 3. Meaning of display or contrast. |
| 4. Find or draw a sample of proportion. | 4. Meaning of proportion. |
| 5. Find or draw a sample of balance. | 5. Meaning of balance. |
| 6. From given copy make a layout first in rough draft, then by setting up letters from newspapers. Present a final layout. | 6. How to make a layout. |

Materials

- | | |
|---|---|
| 7. Select material for specific purposes. | 7. Papers used
- History
- Type, weight, uses |
| 8. Compare ink types for specific jobs. | 8. Types of ink. |

Mechanical Processes

Platen Press

Typesetting

- | | |
|--|--|
| 9. Draw lines and borders, measure slugs and type to familiarize self with measurement. | 9. Printers measurement.
Hand composition procedures. |
| 10. From a layout of the case study the location of the various characters. On blank layouts write the characters in correct position. | 10. California Job Case. |
| 11. Set name to given measure, flush and centered. | 11. Use of composing stick. |
| | 12. Justification of line. |
| | 13. Dumping of stick. |
| 14. Set name and address centered on given measure. | 14. Use of galley. |
| 15. Tie form. | 15. Tying a form. |
| 16. Proof and correct type. | 16. Proofing a job with planer and mallet. |
| | 17. Wet proofs, dry proofs, proof presses. |

- | | |
|--|---|
| 18. Distribute type. | 18. Distributing type, leads, slugs, reglets. |
| | 19. The reglet case and furniture case. |
| 20. Set a business card with name, address, phone number, proof, correct and tie form and store for later use on platen press. | 20. Setting and printing a card. |
| 21. Pull the proof. | |

Platen Press

- | | |
|--|--|
| 22. Lock up a prepared form using the chaser method. | 22. Lock up methods and types. Use of quoins and furniture, accent on chaser method. |
| 23. Cut packing and pack the platen. | 23. Preparation of press and of the press packing. |
| 24. Lock up card form, ink press and position card. | 24. How to ink the press; position guide pins; wash the press. |
| 25. Feed press without inking and without form, but with guides set. | 25. How to feed the press. |
| 26. Lock up and run a business card. | |
| 27. From a prepared logotype or machine cast slug run a memo pad. | 27. Paper feeding using grippers. |
| 28. Distribute complete job, wash up and clean up. | 28. Distribution of type, reglets, slugs and leads. |

Sign Press (Proof Press)

- | | |
|---|--|
| 29. Study operation of sign press, its parts and features. | 29. Use of sign press and related equipment. |
| 30. Learn position of letters and how they are placed on press. | 30. Setting of type and arranging on press. |

- | | |
|---|---|
| 31. Set single word (name, etc.)
Place on press. Distribute type. | 31. Placing of card on press, measures of
press, removing card, removing type,
distributing type. |
| 32. Ink press, place a line on press,
position type, position card and
pull proof. | 32. Inking press. |
| 33. Lay out to dry. | 33. Drying printed card. |
| 34. Wash press. | 34. Washing press. |
| 35. Print a 3-color poster, one
color each day, for a dance,
concert, club notice, etc. | |
| 36. Trim the above signs. | 36. How to trim. |

Unit 4. Printing and Reproducing Processes (Continued)

Mechanical Processes

- | | |
|--|---|
| 1. Prepare chart showing the
specific advantage of each
method or process. | 1. Kinds of printing
- Letterpress
- Intaglio
- Lithographic printing
- Offset lithography
- Flatbed presses
- Cylinder press
- Rotary press |
|--|---|

Material Processes

- | | |
|--|---|
| 2. Prepare one stencil of each type. | 2. Preparation of stencils
(a) Spirit
(b) Gestetner
(c) Multi-color |
| 3. Student to set up the press
and run a previously prepared
master. | 3. Introduction to off-set
- Principle of off-set duplicating
- Introduction to the press
- Preparing for operation
- Duplicating
- Care and wash-up |

4. Off-set ink and paper.
 - Manufacture
 - Characteristics
5. Types of masters.
 - (a) Direct Image
 - (b) Transfer Image
 - (c) Photographic
6. Prepare a master using a variety of techniques listed under manual preparation, machine preparation and preprinting.
6. Preparation of direct image masters.
 - (a) Manual Preparation
 - LeRoy
 - Pen
 - Pencil
 - Crayon
 - Brush
 - Stamp Pad
 - Typewriter
 - (b) Machine Preparation
 - Typewriter
 - Teletype
 - Tabulator
 - Accounting machines
 - Addressograph
 - (c) Pre-Printing masters
 - Offset preprinting
 - Letter press preprinting
 - Flexographic
 - Sign press
7. Prepare a job information sheet using the transfer image master
7. Preparation of transfer image masters.
 - (a) Dry copier
 - (b) Wet copier
 - (c) Electrostatic
8. Produce an offset master.
8. Introduction to dry copiers.
 - Features
 - Operation
 - Production
 - copying
 - transparencies
 - offset masters

9. Introduction to wet copiers.
 - Limitations
 - Preparation of chemicals
 - Setting up
 - Exposure
 - Developing
 - Copying
 - Producing masters

References

Drafting

Stirling Norman, Technical Drawing, Macmillan Company of Canada

French and Swanson, Mechanical Drawing, 7th Edition, McGraw-Hill of Canada

Printing and Graphic Arts

C. W. Hague, Printing and Allied Graphic Arts, Bruce Publishing Co.

Kauffman, Graphic Arts Crafts, Van Nostrand

Albert Koslaff, Art and Craft of Screen Processes, Bruce Publishing Co.

Darvey Carlson, Graphic Arts, Charles A. Bennet Co. Inc., Peoria, Ill.

Careers in Graphic Arts, Graphic Arts Council, Ottawa

Marinaccio and Osburn, Exploring Graphic Arts, Van Nostrand

Information from Barber Ellis of Alberta Limited - Edmonton, Calgary (Upon Request)

Neil Stillman, Industrial Arts Work Units in Graphic Arts,
Available from Still-Mar Associates, 25 Sherborne Avenue, Lancaster, New York.

GRAPHIC COMMUNICATIONS 20

Unit 1. Drafting

Introduction

Considerably more experience will be gained by the student in the basic Graphic Communications areas as he progresses through this course. More emphasis is placed on design and the development of competencies in the use of materials and equipment.

Course Content

What the student should be able to:

DO

KNOW

Mechanical Processes

1. Function and use of drafting machine.

Projection Methods

Orthographic Projection

- | | |
|--|---------------------------|
| 2. From isometric draw and dimension orthographic (curves and circles). Minimum. | 2. Rules of dimensioning. |
|--|---------------------------|

Isometric Projection

- | | |
|---|--|
| 3. From orthographic view draw and dimension isometric view (circles and curves). | 3. Dimensioning of isometric. |
| | 4. Compass method of drawing an ellipse. |

Pictorial Drawing

- | | |
|--|--|
| 5. Draw a woodwork project in parallel or one-point perspective. | 5. Fundamentals of parallel perspective. |
|--|--|

Sheet-Metal Drawing

6. Develop drawing of circular scoop.
6. Development of curved surfaces by projection of points from the orthographic.

Sectional Drawing

7. Draw offset or aligned sectional view of a piece of machinery.
7. Sectional views.
8. Conventional lines and machine symbols.
9. Draw a casting showing the practical application of the auxiliary view.
9. Fundamentals of drawing auxiliary view.
10. Method of projecting curved outlines.

Architectural Drawing

11. Draw garage showing the four elevations.
11. Letters and symbols used.
12. The responsibilities of the architect.
13. Preparation of the site.
14. Basic building techniques.
15. Local regulations for building permit.

Electronic Drawing

16. Schematic of one-tube radio.
16. Electronic symbols.

Machine Drawing

17. Draw advanced detailed machine assembly (at least six parts)
17. Knowledge of threads, bolts and other forms of fastening.
18. Review of machining symbols and methods of production.

Material Processes

Tracing and Printing

- | | |
|---|--|
| 19. Trace and print one of the architectural drawings. | 19. Printing procedures, printing machines, and various different processes. |
| 20. Trace and print one of the other drawings completed in the second year. | |

GRAPHIC COMMUNICATIONS 20

Unit 2. Photography

Course Content

What the student should be able to:

DO

KNOW

Orientation and Review

- | | |
|---|--|
| 1. Material covered in first year. | |
| 2. Build a suitable negative filing system. | 2. Modern applications of photography. |

Composition

- | | |
|--|---|
| 3. With particular regard to proper composition take the following pictures:
(a) Bridge
(b) Child portrait
(c) Flower closeup
(d) Architecture piz
(e) Own still life arrangement | 3. Criteria for good composition
(a) Landscape composition
(b) portraits
(c) Still life
(d) Animals
(e) Plants and flowers |
|--|---|

Materials

Film Characteristics

- | | |
|--|--|
| 4. Take assigned picture using each type of film (ortho and pan). When processed and printed write up results in notebook and mount print in notebook. | 4. Types of film
(a) Orthochromatic
(b) Panchromatic
(c) Film and speed ratings
(d) Physical properties
(e) Photographic properties
(f) Tungsten and daylight type films |
|--|--|

Mechanical and Material Processes

- | | |
|--|---|
| 5. Make drawings and record observations in notebook regarding various properties of light. | 5. Properties of light
(a) Reflection
(b) Refraction
(c) Kinds of light used in photography |
| 6. Make drawings of various types of lenses. | 6. Camera lenses
(a) Focal length
(b) Angle of view
(c) Aberrations
(d) Care of lenses
(e) Resolving power
(f) Types of photographic lenses |
| 7. Take pictures of assigned subjects using various aperture settings. Record results in notebook. | 7. The f-stop
(a) Effective aperture
(b) Depth of field
(c) Relative exposures
(d) Critical aperture
(e) How stops are marked |
| 8. Take pictures of moving objects. Some of these should be slow moving and some fast moving objects moving at various angles of the camera. Keep a record of exposure data. | 8. Types of Cameras
(a) Subminiature 16mm
(b) Miniature 35 mm
(c) Folding camera
(d) Twin lens and single lens reflex
(e) Press camera
(f) View camera
(g) Motion picture camera
(h) Process camera |

Enlarging

9. Make an enlargement of an overexposed and underexposed negative, using the correct contrast grade of paper.
10. How to use the enlarger.
10. Make an enlargement of an overexposed negative using filters to correct. Use polycontrast paper preferably double weight.
10. Enlarging papers.
11. Enlarging procedures.
12. Basic print exposure control
13. Projection control
 - (a) Use of filters
 - (b) Correction of distortion
 - (c) Vignetting
 - (d) Diffusing
 - (e) Retouching
 - (f) Spotting

Filters and How to Use Them

14. Take a landscape picture with various filters. Take the same scene without filter. Mount resulting prints in notebook with evaluation.
14. Filter factors.
15. Types of filters
 - (a) Gelatin
 - (b) Precision round
 - (c) Filter in black and white photography
 - (d) Filter transmission characteristics
 - (e) The selection of a filter

Using The Camera

- | | |
|--|--|
| 16. Take 2 sports action pictures, process, print and mount in your notebook. | 16. How to set camera for action photography
(a) Pre-focusing the camera
(b) Selecting proper shutter speeds
(c) Stopping action at its peak |
| 17. Take a night picture using a tripod. Mount resulting picture in notebook. | 17. How to set camera for night photography |
| 18. Take a portrait picture of a classmate and record lighting arrangement, light meter reading. | 18. How to set camera for available light photography
(a) Light meters - incident light type
(b) Portraiture
- lighting setups
- Poses
- Choice of background |

GRAPHIC COMMUNICATIONS 20

Unit 3 and 4. Printing and Reproducing Processes

Introduction

The emphasis in this unit will be on preparation of masters for the offset printing press using various methods and processes. Production of transparencies using a number of different processes and methods will be studied.

The two units are combined in the outline that follows:

Course Content

What the student should be able to:

DO

KNOW

Composition and Design

1. Review the principles studied in Grade 11.

2. Preparation of artwork for lithography
 - Line Drawings
 - Continuous tone copy
 - Half tone
 - Highlight areas
 - Middle tone

Materials Processes

3. Layout
 - Forms
 - School paper
 - Posters
 - Programs

3. Preparation of photographic masters.
 - (a) Negative Masters
 - Copy preparation and design
 - Producing a negative on process camera
 - Platemaking procedures
 - Handling half-tones
 - (b) Positive Masters
 - Comparison to negative masters
 - Preparing copy on translucent material
 - Application

Production of Transparencies

4. Make a map transparency using overlay methods.

4. Homemade transparencies.
 - Acetate transparency using pens, pencils and typewriter
 - Overlay techniques
 - Protecting transparencies
5. Spirit Duplicator transparencies
 - Preparing a master
 - Running a frosted acetate sheet
 - Use of translucent pencils
 - Use of transparent pencils
 - Use of pens and brushes
 - Use of color adhesive sheets
 - Mounting transparencies

6. Diazo transparencies
 - Preparing a translucent master
 - Exposure to sunlight or ultra-violet source
 - Ammonia developing
 - Making colored overlays.
7. Diazo copying machines.
 - Exposure using a diazo rotary light source
 - Exposure method using a glass light table
 - Positive translucencies from photographic negatives
 - Positive transparencies with Polaroid Land Projection film type 46-L
8. Machine copiers
 - Diffusion transfer and dye transfer copiers
 - Infra-red copiers

Silk Screen

- | | |
|--|--|
| 9. Study prepared information sheets and become familiar with the tools and equipment, and their uses. | 9. Application of silk screen tools and equipment. |
| 10. Student to select the design and draw or trace it on paper. | 10. How to prepare the copy. |
| 11. Cut a stencil from a design. | 11. How to cut the stencil. |
| 12. Place fabric on printing frame and prepare frame. | 12. How to prepare the screen. |
| 13. Prepare and print film prepared for this purpose. <ol style="list-style-type: none"> (a) Mount film (b) Box in film (c) Position and feed (d) Print the design (e) Clean the screen | 13. How to operate the equipment. |

14. Prepare and print a book cover
in two colors.

References

Same as for Graphic Communications 10

GRAPHIC COMMUNICATIONS 30

Introduction

Graphic Communications forms a very important function in modern society. The printed word, picture, plan or design is central to many of our activities both at work and in leisure. The occupational areas open to students with the background these courses provide is very broad. This course should help students to become oriented to some of the vocational choices within this area.

Unit 1. Drafting

Course Content

What the student should be able to:

DO

KNOW

Architectural Drawing

- | | |
|--|---|
| 1. Given elevation draw floor plan with electrical and plumbing details. | 1. Different styles of houses. |
| 2. Sectional view of house. | 2. Frame and roof design. |
| | 3. Symbols for building materials, electrical and construction. |

Machine Drawing

- | | |
|---------------|--|
| 4. Draw cam. | 4. Part played in industry. |
| 5. Draw gear. | 5. Fundamentals of design and operation. |
| | 6. Meaning of terms (displacement, motion) |
| | . Terms used (pitch, root, etc.) |
| | 8. Rack and pinion, bevel gears and their application. |

Topographical

- | | |
|------------------------------------|--|
| 9. Draw simple plan of local area. | 9. Mapping symbols. |
| 10. Industrial or business chart. | 10. Understanding of contours. |
| | 11. Use in industry. |
| | 12. Relation between production and advertising. |

Pictorial Drawing

- | | |
|---|---|
| 13. Draw exploded view of project or machinery. | 13. Application for use by unskilled labor. |
|---|---|

Sheet Metal Drawing

- | | |
|--|---|
| 14. Develop sheetmetal problem involving intersection. | 14. True length by triangulation. |
| | 15. Line of intersection between prisms, cylinders and cones. |

Automotive Drawing

- | | |
|---|--|
| 16. Draw mechanical part of automobile. | 16. General theory of the operation of the internal combustion engine. |
| 17. Drawing of the electrical system of automobile. | 17. Elementary maintenance. |

Tracing and Printing

- | | |
|--|--|
| 18. Trace and print one drawing completed in the third year. | 18. Review of printing procedures and processes. |
|--|--|

Extra assignments may be given from the following reference books as required.

Reference Books

*French & Svenson, Mechanical Drawing, McGraw-Hill Publishing Company
Stirling, Technical Drawing, Macmillan Company

Reference Books (Continued)

Jensen & Mason, Drafting Fundamentals, McGraw-Hill Publishing Company

Scrogin & Bettencourt, Applied Drawing & Design, McKnight & McKnight Pub. Co.

Coover, Industrial Arts Drawing & Blueprint Reading, McGraw-Hill Pub. Company

GRAPHIC COMMUNICATIONS 30

Unit 2. Photography

Course Content

What the student should be able to:

DO

KNOW

Modern Applications of Photography

- | | |
|--|--|
| 1. Individual student reports on modern applications of photography. | 1. Modern applications of photography <ul style="list-style-type: none">(a) Commercial(b) Illustration(c) Portraiture(d) Press(e) Police(f) Industrial(g) Nature |
| 2. Make a copy negative of a continuous tone of print and produce a print. | 2. Roentgenography <ul style="list-style-type: none">(a) The nature of x-rays(b) Photographic properties(c) Safety precautions |
| | 3. Infra-red <ul style="list-style-type: none">(a) The spectrum(b) Photographic properties(c) Practical uses |

4. Process camera work
 - (a) Line copy
 - (b) Half-tones
 - (c) Types of equipment
 - (d) Color separation and duotone
 - (e) Handling and processing film.

Darkroom Controls and Techniques

5. Superimpose a picture of a simple pattern over that of an architectural picture.
5. Darkroom Techniques
 - (a) Extended development
 - (b) Intensification and reduction
 - (c) Types of intensifiers and reducers
 - (d) Special printing controls

Photography As Related To The Offset Press

6. Make a 65 line pre-screened print on your enlarger using Reprolith Ortho paper.
6. Printing requirements for reproduction purposes.
7. Make a halftone negative from above enlargement.
8. Strip in and opaque halftone for platemaking.

Print Finishing

9. Tone a picture using any toner desired. Dry mount for display.
9. Print finishing procedures
 - (a) Toning
 - (b) Spotting
 - (c) Oil tinting

Color Photography

11. Shoot a roll of 35mm color film e.g. Ektachromex
11. Color photography procedures
 - (a) Additive and subtractive methods
 - (b) Types of color film
 - (c) Methods of making color prints
 - (d) Developing 35 mm color film
 - (e) Color temperature of lights
12. Process the roll of 35 mm color film.

Motion Picture Photography

13. Take a 50 foot sequence of movie film. This sequence should be carefully planned including writing of script and titling.
13. Motion picture photography techniques
 - (a) Planning the picture (writing the script)
 - (b) Titling
 - (c) Methods of processing color and black and white
 - (d) 8mm and 16mm movie cameras, films and their use.
 - (e) Movie projectors - use of
14. Edit and splice in titles.

Recommended Film Strip Series

McGraw-Hill or Ansco of Canada (Loan)

Recommended Text Book

Practical Photography - Robert A. McCoy, McKnight & McKnight Publishing Co.
Ansco Guide to Photo Fun - Ansco Photo Products

Recommended Reference Books

1 set booklets on Photography from McBain Camera

1 Graphic Graflex Photography - Morgan (McBain Camera)

Photography Study Guide - Department of Industrial Education, Mississippi State College (a series of 112 job sheets)

GRAPHIC COMMUNICATIONS 30

Unit 3. Printing and Reproduction Methods

Course Content

What the student should be able to:

DO

1. (a) In notes, draw up a chart on "the duplicating cycle".
(b) Prepare and run masters of business forms as required by school administration, library and shop.
2. (a) Using pre-printed masters of business forms, have students prepare selected master and duplicates.
(b) Prepare masters for a two-color run of a safety poster.

KNOW

1. Practical application of offset.
The duplicating cycle - key operations of business.
 - A. Manufacturing
 - Planning
 - Producing
 - Assembling
 - Stocking
 - Engineering
 - B. Buying
 - Requisitions
 - Purchasing
 - Receiving
 - Storekeeping
 - Disbursing
 - C. Distributing
 - Selling
 - Ordering
 - Delivering
 - Billing
 - Collecting
 - D. Administrative & Accounting
 - Disbursing
 - Reports
 - Record keeping
 - Forms duplicating
 - Mailing
2. The offset press.
 - (a) Review preparation for operation.
 - (b) Review duplicating procedures
 - (c) Aid to offset duplicating
 - Function of plate, blanket and cylinder
 - Inking system
 - Dampening mechanism
 - Margin control

2. The offset press. (Cont.)
 - (d) Color printing
 - Line color work
 - Separations and duo-tones
 - Registration for color work
3. Draw up a chart.
i.e. A comparative study of duplicating processes.
3. Duplicating processes.
Evaluation and comparison of all duplicating processes, in regards to economy, speed of production, volume, ease of operation.
4. Relationship between labor and management.
5. Mass produce a product, brochure, school paper, etc., as a culminating experience of the years work.
5. Set-up of management and labor organizations to produce a paper.

References

Multigraph Applications in the Basic Markets
 Reference Manual - certified Duplicating Masters
 Multigraph Methods for Adding, Deleting, Substituting Information on Duplicated Business Records
 Available from: Addressograph-Multigraph Corporation, The Market Development and Sales Training Department

GRAPHIC COMMUNICATIONS 30

Unit 4. Bindery

Course Content

What the student should be able to:

DO

1. Jog and pad a stack of paper.
2. Glue a wrap around cover.

KNOW

1. How to jog and glue a pad.
2. Wrap around cover.

- | | |
|--|---|
| 3. List the types of folds. Find a sample of each. State purpose of each type. | 3. Folding - Types of folder. |
| 5. List reasons for using bone folding. Fold stock using bone folder. | 4. Paper grain and relation to folding. |
| 6. Perforate and side stitch a stack of paper. | 5. Bone binding. |
| 7. Repair worn side stitched magazine. | 6. How to side stitch. |
| 8. Fold, interleave and side stitch a stack of paper. Repair worn saddle stitched magazine and periodicals. | 8. How to do saddle stitching. |
| 9. With a hand punch, punch a stack of paper with 2-hole punching and a stack with three hole punching. | 9. How to punch paper. |
| | 10. Side post binding.
Standard 2 and 3 hole punching. |
| 11. Fasten together with binding posts or acco fastening. | 11. Fasteners - acco, etc. |
| 12. Using many samples of stock fold each with and against the grain. Rate the papers according to their folding characteristics. Present a report on the results. | 12. Folding qualities of papers and cardboard. |

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CURRICULUM GUIDE

For Reference

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